9-25-2002

Innovative Teaching in Math 2002

Nova Southeastern University

Inovative Teaching in Math

Middle Grades Mathematics (Grades 5 - 9)

Plan Two of the Florida Department of Education's requirement for middle school mathematics' certification: B.A. degree + 18 semester hours in mathematics

1. Precalculus, Calculus, or Trigonometry
2. Geometry
3. Probability or Statistics

Required Courses for Middle School Mathematics Certification			
Course Number		**Credits**	**Course Title**
M.S.	**Ed.S.**		
INT 500	INT 700	3	Fun with Calculus
INT 501	INT 701	3	Geometry Through Logical Play
INT 502	INT 702	3	Statistics Fitness for All
INT 503	INT 703	3	The Number Adventure
INT 504	INT 704	3	Mathematical Stories
INT 505	INT 705	3	The Magic of Mathematics
Add the following courses for a M.S. or Ed.S. degree in Innovative Teaching			
INT 510	INT 710	3	Mathematics Assistance Project Through Mentorship
INT 511	INT 711	3	Building a Successful Community Partnership
CUR526	Required	3	Educational Research
EDU503	Required	3	Classroom Management and Organization
CUR506	Required	3	Curriculum & Instruction
EDU501	Required	3	School & Society

9 credit hours in other mathematics courses.

Courses to include the following content:

1. Pre-algebra
2. Algebra
3. Problem Solving

High School Mathematics (Grades 6 - 12)

Plan Two of the Florida Department of Education's requirement for high school mathematics certification. BA + 30 semester hours in mathematics

1. Precalculus, Calculus, or Trigonometry
2. Geometry
3. Probability or Statistics
4. Calculus II
5. Abstract and Linear Algebra

Required Courses for High School Mathematics Certification

Course Number		Credits	Course Title
M.S.	Ed.S.		
INT 500	INT 700	3	Fun with Calculus
INT 501	INT 701	3	Geometry Through Logical Play
INT 502	INT 702	3	Statistics Fitness for All
INT 503	INT 703	3	The Number Adventure
INT 504	INT 704	3	Mathematical Stories
INT 505	INT 705	3	The Magic of Mathematics
INT 506	INT 706	3	Calculus in Action!
INT 507	INT 707	3	Adventures in Abstract and Linear Algebra
INT 508	INT 708	3	Intriguing Mathematical Problems
INT 509	INT 709	3	A Mathematics "Buffet"
Add the following courses for a M.S. or Ed.S. degree in Innovative Teaching			
INT 510	INT 710	3	Mathematics Assistance Project Through Mentorship
INT 511	INT 711	3	Building a Successful Community Partnership
CUR526	Required	3	Educational Research
EDU503	Required	3	Classroom Management and Organization
CUR506	Required	3	Curriculum & Instruction
EDU501	Required	3	School & Society

Fun with Calculus! – INT 500 (3 cr.)

This course presents mathematics as growing out of the classical liberal arts to form a natural bridge between the humanities and the sciences, integrating the history and pedagogy of mathematics in a way that may be of interest to perspective teachers. Only a modest amount of high school mathematics is required as background, and algebraic manipulations are kept at a simple level.

Geometry Through Logical Play – INT 501 (3 cr.)

Geometry is one of the first branches of mathematics. In this course, students will have the opportunity to learn and organize all materials known to geometry into a logical deductive system through the medium of play. The students will also study the Egyptian and Greek history of geometry.

Statistics Fitness for All - INT 502 (3 cr.)

This course will examine statistics in two ways. First, students will explore a mass of data, including charts and tables. Second, students will examine a methodology for collecting, analyzing, and interpreting data. This course will also investigate the definition of statistics and some of the procedures for dealing with statistics. The students will be prepared to use statistics in everyday life, as well as to teach statistics in the middle or high school classroom.

15 credit hours in other mathematics courses.

Courses to include the following content:

1. Pre-algebra
2. Algebra
3. Problem Solving
4. Problem Solving II
5. Modern Mathematics

The Number Adventure - INT 503 (3cr.)

Learn algebra through puzzles and games. This course will offer opportunities for students to explore pre-algebra problems as jigsaw puzzles with pieces that they know are missing. Once the missing pieces are found, the problems are solved!

Mathematical Stories – INT 504 (3 cr.)

Discover exciting secrets about mathematics and do math without knowing you are doing any math problems. Learn how to inspire students in the love of mathematics through story contents while increasing oral and written literacy skills, reading comprehension, and logical thinking.

The Magic of Mathematics – INT 505 (3 cr.)

You don't have to be a mathematician to discover the magic of mathematics. This course will present an enjoyable and interesting way of studying problem solving. Students will investigate a variety of strategies on how to solve these interesting problems. Equally as important as knowing how to teach problem solving is knowing what problems to use with your students.

Calculus in Action - INT 506 (3 cr.)

Learn calculus through everyday life experiences! This course will take students through exciting hands-on projects using the principals of calculus. Students will

discover how things fall; how rockets escape earth's gravitation; how black holes formed; how heat flows; How population grows; how radioactive decay; and how children swing. Students will also experience the graphical approach of Mamikon's calculus. Questions such as how parabola surfaces focus the light and many others will also be addressed in this class.

Adventures in Abstract and Linear Algebra - INT 507 (3 cr.)

All of us have the natural abilities to solve problems within daily real-life problems that require logical mental processing. Linear algebra is a powerful tool for problem solving and abstract algebra provides a fundamental block of the algebra system. Come join us in the adventures in abstract and linear algebra. We will examine problems and investigate ways of solving them through the natural process of real-life problem solving.

Intriguing Mathematical Problems – INT 508 (3cr.)

This course will guide students in how to make a start on any questions; how to attack it effectively; and, how to learn from the experience. Students will realize that being stuck sometimes can be considered an honorable state and an essential part of improved thinking.

A Mathematics "Buffet" – INT 509 (3 cr.)

Students will take an exciting adventure to explore some of the paths that penetrate the mathematical wilderness (world). Topics such as topology and fractal geometry will be presented in a project-based format. Students will emerge with renewed enthusiasm and better appreciation for the dynamic and useful world of modern mathematics.

(M.A.P.) Mathematics Assistance Project Through Mentorship Capstone - INT 510 (3cr.)

When you give of yourself to mentor a child in need, you will gain personal satisfaction, help children learn, improve children's test scores, and receive many other personal rewards. This class will teach you how to assemble a Mathematics Assistance Project using mentors. The project provides lessons, materials, and instructions for hands-on, fun activities that engage students while they learn, practice, and use necessary math skills.

Building a Successful Community Partnership Capstone - INT 511 (3 cr.)

As a teacher in the classroom, you are more than just a teacher. You are an advocate for your school's programs. In this course, you will learn the secrets of how to build a successful community partnership. We will investigate resources and examine winning projects that will help you work effectively and raise money for your school. You will learn that the best grant proposals don't just make assertions. They back up claims with facts. Both statistical information and anecdotal evidence lend substance to a proposal.

problems

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